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ABSTRACT

This paper describes how a new elementary school used technology as the catalyst for school restructuring. First, the principal studied 36 schools that had been identified as successful change sites. She conducted interviews with and surveyed the teachers and principals, focusing on how the principal made a difference in facilitating school restructuring. The paper outlines the school's steps in the change process: recognize readiness and agree to proceed; form core planning committees; review the research and professional literature; review successful practice; involve everyone in the planning process; write the plan; implement the plan; and keep it going. The paper outlines the school's technology proficiencies required of students at each grade level, how technology was integrated into the curriculum, the ways in which technology was applied in the classrooms, and the roadblocks encountered and solutions developed. One figure is included. (Contains 52 references.) (LMI)

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Success in Restructuring: A Step-By-Step Recipe

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Success in Restructuring: A Step-By-Step Recipe

The topic of this paper is Restructuring is as Easy as 1,2,3! In this case, restructuring starts with technology. Think of technology as a bus. It is going to go whether you get on or not. Now, you can choose to get on the bus or you can choose to let the bus leave without you. This is the story of a school where everyone made a commitment to get on the bus with their students and use technology to help students prepare for their futures.

Why is restructuring as easy as 1,2,3?
1 - And the Survey Says ...
This paper will review what research says about how principals can facilitate successful school restructuring.
2 - A Road Map for School Restructuring
This paper will present a specific step-by-step road map for school restructuring.
3 - Get on the Bus!
This paper will describe how technology can be the catalyst for school restructuring and then offer specific examples of how technology is integrated throughout the curriculum.

1 - And the Survey Says ...

Have you heard this old joke? How many psychologists does it take to change a light bulb? One, but the light bulb really has to want to change. Well, how many principals does it take to change a teacher? Only one, but the teacher really has to want to change.

First, I will review a research study that outlines how a principal can influence teachers so that they want to change and in turn, facilitate successful school change.

Let's start at the beginning. When I attended 'principal school,' I became familiar with the effective schools research. We know the characteristics of an effective school. What the research didn't tell us was how to become effective. It is clear that the principal can make the difference in a school and that the principal should provide the leadership to coordinate efforts to establish the vision and formulate school goals. I believe in the vision. We need to know where we are headed before we can make a plan to get there. But in reality, schools can have this vision. Can people explain it? Is it part of their everyday life? If you can find the plan, do you have to blow the dust off of it? So, when I became a principal, I wanted to be able to say: Here is the vision and then say, ... we're getting there. I wasn't sure how to do that. After the vision is set

and goals are defined, educators can have a relatively clear picture of where they are going and what they want to accomplish. But I wanted to know how principals work with teachers to get from here to there and specifics about how principals guide the process of change.

So ... if you want to know what works, look at successes. Therefore, I conducted a research study to determine how successful principals in successful schools were doing that.

Thirty-six schools were studied. The schools had been identified by leaders in the field of education as successful change sites. The principal and the teachers at each of these schools had collaborated in building-based efforts to make successful changes in their instructional programs. Teachers and principals in the study were asked to describe the Principal's Roles and Actions that had a positive effect on the process of change. Teachers and principals completed questionnaires and teachers and principals were interviewed.

By looking at the responses from the principals and teachers, all the comments were grouped into strategies and definitions. I see the results as a guide to successful educational change as seen from the perspectives of principals and teachers who had participated in successful change efforts.

Here is an item that was part of the questionnaire:

> Describe anything that the principal did to help teachers change their teaching beliefs, guide the process of reform in your school, or that had a positive influence on the change efforts.

Next, follows the results from portions of the study.

Principals' Roles and Actions

There were eight roles and actions that had a positive effect on the process of change.

(1) *Supporting Teachers* - Teachers described situations where the principal motivated and encouraged teachers, offered positive verbal and non-verbal feedback, and created an atmosphere where taking risks and experimenting with new ideas and techniques was encouraged. Teachers said that principals: wrote notes to teachers praising them for trying innovative ideas; principals demonstrated a positive attitude; principals encouraged teachers to try new things but made participation voluntary on the teacher's terms; principals gave teachers time to adjust to new ideas; and displayed enthusiasm for classroom activities.

(2) *Planning and Participating in the Process* - Here, principals wrote curricula and grants with teachers, they participated in planning and classroom instruction, they offered teaching suggestions, and observed teachers.

(3) *Providing for Training* - Principals provided time for planning, encouraged teachers to attend workshops, presentations, and in-services and made the arrangements for teachers.

(4) *Providing Resources* - Teaching materials and resources were purchased to implement programs. The materials needed to be accessible in the classroom.

(5) *Providing Information* - Principals were a resource for research, information, and journal articles and provided these for teachers.

(6) Communicating with Parents and Constituencies - Principals communicated with parents and others and supported teachers' efforts publicly.

(7) *Empowerment of Teachers* - Principals empowered teachers to make important decisions; principals collaborated with teachers and shared the decision-making process with them.

(8) *Leading the Changes* - Teachers saw the principals as leaders. Principals were coordinating efforts to define the school vision and they were guiding the process of change.

These are the eight Principals' Roles and Actions that had a positive influence on school change.

Here are direct teacher quotes that can make it even clearer. The purpose of sharing so many quotes is to see how often different voices expressed the same sentiment.

> "The change was fully supported by the principal. It was presented as an option. For any change to occur and be successful, it must be wanted by the teachers and supported by the principal."
>
> "Our principal has been the guiding force in encouraging teachers to attend professional meetings. Our principal has provided days for conferences, paid registration fees, and reimbursed teachers for motel expenses."

"In my case, I found the verbal support was most beneficial. I was told that my new style was accepted and encouraged. I received notes expressing the desire that I continue what I was doing."

"She throws out ideas and then it becomes a group decision. She facilitates but doesn't control because what we do together is what is most important."

"He makes teachers forward thinking. He reads a lot of research and keeps current. He makes teachers think by asking, 'Have you thought about this?'"

"She didn't try to change everything at once. She doesn't mandate that we are going to do this now. She has been very wise in taking time to change."

"He creates a climate where teachers can take risks. He talks about change but that isn't enough. He follows that up by giving suggestions. He gives teachers things to read. He knows what is going on in the classroom. He is in and out of the classroom all the time."

It is important to remember that these quotes came from motivated teachers who were involved in school change. They teach in schools that have experienced success in their reform efforts. Over and over, these teachers talk about the importance of the principal in their efforts. I think these quotes state exactly what teachers want principals to do in the process of change.

Three points are especially important.

First, the role of the principal in the change process is crucial. We knew that but here teachers are stating it. One teacher said that "change occurs at our school because of our principal."

Second, the collaborative planning structures reported by these principals and teachers suggests that the approach to change should be both top-down and bottom-up. If it top-down only and it is the principal's plan, there can be resistance. If it bottom-up only and only teachers are leading, then change is usually happening in a few classrooms but not building-wide. One teacher said, "It is a partnership--neither top-down or bottom-up."

Third, even traditional teachers will change their teaching methods and beliefs if they are empowered to make the decisions that will impact their classrooms. Teachers must be involved at all stages, principals and teachers must work together, and there has to be lots of opportunities for ongoing and continuous

staff development. Teachers need the chance to talk to other teachers, observe teachers in their own buildings, and at other schools, and lots of support and encouragement. Teachers appreciate the close contact of their principal, the principal's participation in their lessons, and the principal's suggestions but it is important for teachers to know that they can change at their own rate and in a risk-free environment. Change must be on the teacher's terms and the teacher must see that it will benefit students.

> Here are a few more Teacher Quotes:
> "The teacher's attitude is vital to change. If a teacher doesn't believe that the change will improve the teaching of children, reform is virtually impossible. Teacher attitude and appropriate materials make reform happen."
>
> "Change is scary and uncomfortable. Without administration and peer support, teachers worry about 'trendy' shifts in education. Standardized tests also make innovations less attractive if teachers are worried about how their students will look in comparison to other classes."
>
> "Teachers are the most important component in the change process because they will do what they want in their classrooms regardless."
>
> "Teachers must have a say and choice for any change process to be successful. It can't be mandated."

So, based on this study, here are some things principals can do: Make more specific suggestions. Principals are in the perfect position because we travel from room to room. Principals can take a good idea from one room and pass it along to another. Teachers need to know that it isn't criticism, it is just a suggestion; teachers can use part of it, all of it, none of it, but we can encourage teachers to think about it, to use what you can when you can.

Principals can encourage lots of staff development. Then, use creative financing to find money to pay for it. Provide opportunities for teachers to share information with other teachers. Principals can hold teachers accountable for what they learn at workshops by conducting follow-up discussions and asking teachers to share at teachers' meetings.

If teachers want to observe someone else in the building, principals can try to help them do it. If teachers want to observe at another school, find time for them to do it. If teachers want to plan as a grade level, we should find a way for them to do it. That helps teachers to capitalize upon each other's strengths through sharing. We have heard before that the principal can make a difference. I think that this information gives us specific ways to do that.

OK, that's what was happening in the research.

2 - A Road Map for School Restructuring

Next, I will discuss how one school approached restructuring and the specific step-by-step process that was used to restructure the school.

The school opened in the Fall of 1993 as a new school--built to feature the latest and greatest in technology. The staff that came to the new school agreed to make a commitment to integrate technology throughout the curriculum. Doesn't that sound good? We thought so. However, saying you are going to integrate technology throughout the curriculum and making it happen in the classroom are two very different matters. How do you do that? Here is what we did.

What is Restructuring?
First, a definition of terms. Restructuring is not simply tinkering with site-based decision-making or innovative programs. It is creating new learning environments which are fundamentally different from the ones which currently exist. A basic premise is that changing the conditions of teaching and learning will ensure higher success for all children.

Also, restructuring means:

* Changes in student experiences: In restructuring, you thoroughly examine teaching and learning and determine how you think children learn best. Once you decide how children learn best, those learning opportunities are provided for all students; it's not just programs for gifted or special education or a small population of students.

* Changes in the collaboration between schools and the community: Restructuring involves expanding your view of school to include parents and community members. Parents and community become equal partners, not just for fund raisers, field trips, and tutors but for curriculum planning and decision-making. Is that a little scary at first? It can be, but the different perspectives can really help educators see outside of the school walls.

* Changes in the professional life of teachers: Restructuring brings an ongoing commitment to continuous self-reflection and self-improvement. Everyone adopts the philosophy that as good as we are, we can always get better. School goals are set and all members of the school community participate in professional development to accomplish the common goals.

Why Restructure?
We were asked why a new school would need to restructure? Other schools may ask: why should we restructure? We are already successful. What restructuring can also do is to focus your efforts and everything you are already doing.

You might still be skeptical. We have seen school reform movements come and go before . Why is this different? The difference today might just be the element of technology. Technology is changing the world of work, the way we learn, and like it or not, it is going to change the way schools operate if schools still intend to prepare students for a future in a technological world. We have to change and progress now due to technology. In today's world of technology, we will fall farther and farther behind if we choose to stand still. Technology was the catalyst for school restructuring for us.

Getting Started
It began one spring. Every new staff member was asked to dream; to write a statement of their vision for the new school and the role, as a teacher, they would play in accomplishing that vision. In a summer workshop, the new staff analyzed and examined the vision statements and wrote a mission statement which represented group consensus.

This is important to mention our mission statement has become a framework for everything else that we do. Our mission statement is posted in the main entry and seen by all staff and students everyday on our school news. We know it, we use it. During staff discussions, our mission statement often guides our decision-making.

Recognize Readiness and Agree to Proceed
Readiness is probably the most important aspect. Without staff readiness, school restructuring will be a rocky road. We determined our readiness through lots of staff discussions. Many states offer incentives to schools to pursue restructuring. We decided to apply for a restructuring planning grant through our State Department of Education. We viewed the restructuring planning grant as a means to provide resources and time to determine how we could accomplish our plan to integrate technology throughout the curriculum.

The principal and a few volunteer teachers wrote a proposal to gain a planning grant. The proposal outlined plans to examine our unique situation and determine how our technology could be used to enhance the educational program. At the end of that school year, schools with planning grants could apply to the State to be designated as a 2000 school. Our 2000 schools gain state recognition and financial support for their restructuring efforts.

Form Core Planning Committee
After we were awarded the restructuring planning grant, a core committee of three teachers, 2 parents, 1 community member, and the principal was formed. We called the committee T^2 for 2000 Team. When the committee met for the first time, the principal outlined the planning process: the first step of the process would be to read research and professional literature to examine the concepts of restructuring and the use of technology; the second step would be to review successful practices by attending conferences and making visits to schools with successful programs; and the third step would be to use research, successful practices, and our own professional judgment and experience as a basis to make decisions which would reflect our local needs.

Read Research and the Professional Literature
The first thing the committee did was read and read a lot. For each meeting, each member of the committee prepared a summary of an article from the professional literature which we discussed. For an entire month, we read about restructuring and school reform. This was so we could understand the concept of restructuring and start to envision the possibilities. Next, we read literature on the integration of technology throughout the curriculum so we could see how that was accomplished in successful schools. These meetings were exciting; interactive and based on knowledge. We were discussing real educational issues. In essence, we were determining what we believed regarding how children learn best.

Review Successful Practice
During the second phase, members of the committee and the staff-at-large attended workshops and conferences and visited other schools. Attendance at workshops and conferences, and observation at model sites gave first hand knowledge of successful practices.

Staff members gave reports about the conferences and site visits at staff meetings and in-house focus sessions. Focus sessions are informal after-school meetings where topics of interest are discussed. Focus sessions are voluntary. Sometimes staff put them on; sometimes the principal presents.

Involve Everyone in the Planning Process
Communication, communication, communication--it is vital. Constantly ask, "Who else needs to involved?" and "Who else needs to know this?" The committee will move fast due to common experiences but bring everyone along or else many will still be at the starting point. Remember this: If a committee in a room designs a plan without input, then it is just as top-down as it is if had come from central office because it is someone else's plan. You have to find a way to make it belong to everyone. Encourage a common vocabulary to generate excitement and ownership; talk it, tell it until it belongs to everyone.

We sent a monthly newsletter called the T^2 Times to all students, staff, parents, central office administration, school board, and other schools. The newsletter explained everything we were doing. We had updates at staff meetings and committee members met with all staff members in small and large groups to talk and work on our plan. We made presentations to the school board and parents. We held work sessions with the entire staff to discuss our mission statement, the restructuring plan, our long term goals, the action plan and underlying strategies, and to address other concerns.

Write the Plan

Next, we started to write our plan. We reviewed our mission statement again. We wrote long term goals. These were called our "We See" statements. The "We See" statements helped us envision our school as we wanted it to be in five years. Then, we took our long range dreams and decided what we could commit to do right away. This became our 1st year action plan with immediate goals and strategies. Dreaming about the future can be safe and exciting but writing a 1st year action plan is the scariest step of all because that represents a commitment to actually implementing the changes that had been determined by mutual agreement. The scary part is that implementation is no longer abstract but will take place at the classroom level by individual teachers.

An Actual Restructuring Plan

Even though restructuring will look different in different schools, you may want to see an example. So, I will share our restructuring philosophy and plan to try to give you a clearer picture.

Initially, we thought that technology was "the thing" and should be the focus of our efforts. However, after looking at research in the area of technology and school restructuring, visiting other successful schools, using our professional judgment, and our own local needs, we designed a restructuring model which illustrates our beliefs about teaching and learning. We believe that teaching and learning should be guided by the philosophy of **connections** and not technology. That is: connections between the academic areas, connections between what is learned from grade to grade, connections between what is learned in school and in their daily life, and connections between what is learned in school and needed for the future. Our restructuring model is called: *We C.O.N.N.E.C.T.* (See Attachment). Each letter in *C.O.N.N.E.C.T.* represents part of our program. We are connecting **C**urriculum, **O**bjectives, individual **N**eeds, a **N**urturing environment, **E**valuation, the use of **C**onnections, and **T**echnology. The connections are accomplished through the use of technology as well as other tools of learning. The biggest revelation was that technology is merely one tool of learning. Technology certainly was the catalyst that made us look at school restructuring but ultimately, we decided that the focus of

teaching and learning should be is on people and that is the rationale for *We* in the center of our model. Our goal is to connect people, instruction, and technology.

Implement the Plan

After we had been designated as a 2000 school and grant money was awarded to help us implement our plan, the next question was, "OK, now what?" We got what we wanted--now what would we do with it? Each year, our entire staff agrees on the yearly action plan. Teachers use the action plan to set individual goals. We work together to accomplish school-wide and individual goals through site visits, staff sharing at teachers' meetings, in-house focus sessions, released planning time, professional reading, attending conferences, informational parent workshops, and inviting speakers to our school. All visits, reading, workshops have a purpose and coincide with the goals we have set.

Our implementation philosophy is that all will commit to the plan and its overall goals. The speed at which any individual teacher implements the plan is very flexible which allows for a variable rate of change. We say: do what you can, when you can.

Words of Wisdom

Why was our experience with restructuring so positive? Here are some "Words of Wisdom" that summarize what worked for us.

* Go slow and make decisions when people are ready--lack of commitment to the philosophy can doom a plan to failure.
* Base decisions on research, successful practices, professional judgment, and local needs.
* Leaders can guide the process but let the ideas and decisions emerge from the participants as you go along.
* Involve everyone in the planning process.
* Communicate everything to everyone.
* Encourage a common vocabulary to generate excitement and ownership.
* Look around and identify the good things that are happening in classrooms and then write a plan which make them happen for all children. The outcome of the plan should not be a surprise to anyone--it simply gives meaning to the restructuring that is already occurring.
* Insist that everyone commit to the philosophy but provide flexibility in the time line of implementation. If all are involved in the planning stages, then commitment to the plan can follow as the next natural progression.

* When restructuring gets overwhelming (and it will), remind everyone of all that has been accomplished.
* Accentuate the positive, spread the good news, and celebrate progress.

Keeping it Going
It is difficult to write a plan, even harder to implement a plan for change, but hardest of all to sustain the change efforts. We have found that the best means to keep it going is to promote:

* total commitment to the plan;
* a flexible time line for implementation;
* yearly school and individual goals to move everyone toward your long range destination; and
* support and training.

Was it a lot of work? Yes. Are we there yet? No. But everyone is working toward the same stated goals. I think the strength of our plan is that we have a mission statement, a restructuring model and plan, and a common vocabulary to focus all of our efforts. It is very powerful to get everyone focused and working together on common goals.

Beware!
That all sounds too easy, doesn't it? I believe that we have been successful because we avoided some critical mistakes:

Don't start with a program such as whole language, cooperative learning, or interdisciplinary instruction. Programs are strategies to accomplish goals. Identify needs first, determine how children learn best, write goals, and then choose strategies to accomplish those goals.

Don't start with the final plan in mind. Leaders be careful: Let the ideas and decisions emerge from participants as you go along. Get to the final plan together. At our very first meeting, I said that I didn't know where we would end up. I said that I would guide the process but the content and decisions would come from all of us.

3 - Get on the Bus!

Technology as the Catalyst for School Restructuring
Next, I will describe how we have taken the "T" in our restructuring model, used it as a catalyst for change, and integrated technology throughout the curriculum.

The Bus Depot
First, we start at the bus depot to lay the foundation for our journey. The bus depot is our school. Our school features state-of-the-art instructional technology consisting of video distribution, media retrieval, a local and wide area network, telephones in every room, access to the World Wide Web and an e-mail address in every classroom, a satellite dish, four computers in every classroom, and a Computer Lab.

We think we have an awesome bus depot!

But ... Even though our school was built to be the school of technology, we also acknowledged that technology is ineffectual unless it becomes an integral component of the curriculum. Technology without a clear educational purpose has no place in schools. Computers are not toys; they are not Nintendo in the classrooms. We see technology as a tool for learning and its use should have a clear connection to curricular goals. Our restructuring model provides the framework for using technology as one tool of learning. We are getting ready to leave the station.

The Luggage
What do we need for the journey? One essential component is constant and ongoing staff development. We do everything we can to gain and share skills. We are fortunate because our district has provided release time, summer workshops, after-school, and Saturday training sessions on a wide variety of topics.

Within our building, we conduct many in-house focus sessions on a variety of topics. We usually work, plan, and deliver the sessions as a team--several teachers and the principal. We try to provide clear and useable instruction at the learner's level as well as supportive and on-site follow-up. We determine the needs through frequent surveys. Teachers respond to surveys and let the school's Technology Committee know what kind of training is needed. The Technology Committee can then plan and schedule in-house focus sessions to address the needs of the staff. For each focus session, we set objectives and post an agenda and people are invited to register for the sessions they wish to attend. If beginning and intermediate levels are offered, participants can look at agendas in advance and decide which level is better for them. We are not "experts," so planning these focus sessions often means exploring new territory and a real willingness to take a risk. We just try to provide assistance for the learners at their level based on our needs. We want people to leave thinking, "I can do this; I want to do this." Experienced users should leave thinking, "I learned something new and useable"

Teachers help each other and often use planning time to answer questions and

help each other through the daily snags that come with using technology. Without on-site help, it is easier to do nothing than to face the inevitable frustrations that occur with the use of technology.

Teachers attend planning and training sessions during school, after school, and during the summer. Teachers read, talk, share, visit other schools, observe classrooms, and work together to accomplish our goals. They are willing to learn new skills, take a risk, and help each other.

But with technology, you have to constantly repack and refill your luggage with more training because it is changing so quickly. Now that you've got your luggage, on with the bus trip ...

The Riders
It is no longer a bus driver and passive passengers. Teachers and students take turns driving the bus and can learn from each other. It is no longer just the driver who knows the route; teachers and students plan the course together. For example, some students may have stronger technology skills because of their familiarity and comfort with computers but teachers still guide the purpose because of their knowledge of curriculum.

The Scenery
What are we seeing and learning along the way?
First, we have K-5 technology proficiencies which set guidelines for each grade level.

TECHNOLOGY PROFICIENCIES

Kindergarten

TERMINOLOGY
* Identify and understand function of the following: monitor, CPU, screen saver, printer, mouse pad, disk, and keyboard.

COMPUTER LITERACY
* Select different icons to change function.
* Manipulate the mouse to reach any place on the screen--click and drag when appropriate.

KEYBOARDING
* Use the keyboard: select letters and numbers; use shift to make capital letters; and use space bar and arrow keys.

WORD PROCESSING
* Write name and words.

GRAPHICS
* Select, use, and create graphics.

TECHNOLOGY PROFICIENCIES

1st Grade

TERMINOLOGY
* Review and understand function of the following: monitor, screen saver, CPU, printer, mouse pad, disk, keyboard, and CD-ROM.

COMPUTER LITERACY
* Move around desktop and use menu bar.
* Use a disk to save files.
* Review using the mouse to reach any place on the screen--click and drag when appropriate.
* Understand care and operation of computer: shutting down the computer, turning the computer on and off, covering the computer.

KEYBOARDING
* Know location of all letter keys, return, escape, delete, space bar, backspace, and arrow keys.

WORD PROCESSING
* Write sentences using capitalization and punctuation.

GRAPHICS
* Select, use, and create graphics.

CURRICULUM
* Use technology to accomplish curriculum integration.

TECHNOLOGY PROFICIENCIES

2nd Grade

TERMINOLOGY
* Review and understand function of the following: monitor, screen saver, CPU, printer, mouse pad, disk, keyboard, CD-ROM, and file server, network, word processing.

COMPUTER LITERACY
* Move around desktop and use menu bar: save, close, open, find, print.
* Use a disk to save files.
* Review using the mouse to reach any place on the screen--click and drag when appropriate.
* Understand care and operation of computer: shutting down the computer, turning the computer on and off, covering the computer.

KEYBOARDING
* Know the home row keys and use of caps lock.

WORD PROCESSING
* Write and edit short stories using paragraphs and different fonts and styles.
* Compose original works on the computer.

GRAPHICS
* Select, use, and create graphics to enhance word processing.

CURRICULUM
* Use technology to accomplish curriculum integration.

PROCESS SKILLS
* Use process skills to: solve problems, work cooperatively, develop higher order thinking skills.

TECHNOLOGY PROFICIENCIES

3rd Grade

TERMINOLOGY
* Review and understand function of the following: CD-ROM, network terminology, word processing, laser disk, cable, satellite, Internet.

COMPUTER LITERACY
* Move around desktop and use menu bar: save, close, open, find, print, print options, trash.
* Boot the computer.
* Use and maintain a disk to save files.

KEYBOARDING
* Develop proficient keyboarding skills.

WORD PROCESSING
* Write and edit stories with graphics.
* Manipulate fonts, font sizes, styles, spacing.
* Edit using copy, cut, and paste.
* Compose original works on the computer.

CURRICULUM
* Use technology to accomplish curriculum integration.

PROCESS SKILLS
* Use process skills to: solve problems, work cooperatively, develop higher order thinking skills, and learn new technology.

DISTANCE LEARNING
* Using distance learning to communicate.

TECHNOLOGY PROFICIENCIES

4th Grade

TERMINOLOGY
* Review and understand function of the following: network terminology, word processing, laser disk, cable, satellite, Internet, data base, spreadsheet, telecommunications, Xap shot.

COMPUTER LITERACY
* Move around desktop and use menu bar: save, find, print options, trash.
* Use and maintain a disk to save files.

KEYBOARDING
* Review and practice keyboarding.

WORD PROCESSING
* Write and edit using spell check, thesaurus, margins, centering, graphics.
* Manipulate fonts, font sizes, styles, spacing.
* Edit using copy, cut, and paste.
* Compose original works on the computer.

CURRICULUM
* Use technology to accomplish curriculum integration.

PROCESS SKILLS
* Use process skills to: solve problems, work cooperatively, develop higher order thinking skills, and learn new technology.

DISTANCE LEARNING
* Using distance learning to communicate and access information.

DATA BASE
* Use and manipulate a data base: concept and purpose, terms, moving around, list view, form view, sorting, printing, saving.

SPREADSHEET
* Use and manipulate a spreadsheet: prediction, sorting, charts, graphs.

ETHICS
* Ethics: copyright, file security, sharing of resources

TECHNOLOGY PROFICIENCIES

5th Grade

TERMINOLOGY
* Review and understand function of the following: network terminology, laser disk, cable, satellite, Internet, data base, spreadsheet, telecommunications, Xap shot, scanner, multi-media, LCD.

COMPUTER LITERACY
* Move around desktop and use menu bar: save to folders, disk, desk top, and hard drive; print options; trash.
* Use command key for shortcuts.

KEYBOARDING
* Review and practice keyboarding.

WORD PROCESSING
* Write and edit using spell check, thesaurus, margins, centering, graphics.
* Manipulate fonts, font sizes, styles, spacing.
* Edit using copy, cut, and paste.
* Compose original works on the computer.

CURRICULUM
* Use technology to accomplish curriculum integration.

PROCESS SKILLS
* Use process skills to: solve problems, work cooperatively, develop higher order thinking skills, and learn new technology.

DISTANCE LEARNING
* Using distance learning to communicate and access information.

DATA BASE
* Use, manipulate, and create a data base: concept and purpose, terms, moving around, list view, form view, sorting, printing, saving, editing, creating.

SPREADSHEET
* Use and create a spreadsheet: prediction, sorting, charts, graphs, formula.
* Integrate data base, spreadsheet, and word processing.

ETHICS
* Ethics: copyright, file security, sharing of resources

MULTI-MEDIA
* Create multi-media presentations.

Next, are included some examples of classroom applications and some specific software applications that have worked for teachers in the field.

KINDERGARTEN
* A university professor from another state videotaped a Kindergarten class for her pre-service students and the class kept in contact via the Internet after she left. The students ask questions and report classroom news. Stress using email for a purpose so we can move beyond email as glorified note passing.
* Software programs reinforce letter recognition, patterns, and shapes which are a regular part of Kindergarten programs.

1st GRADE
* 1st Graders type Spelling lists and write sentences with the words.
* Later, they write short stories and add illustrations. This reinforces oral and silent reading, language, and writing. Process writing is enjoyable because of the ease of entering and editing work. Young students learn that the first effort is not always the best effort or finished product.
* Students type book reports (ClarisWorks).
* They also produce individual and class reports on subjects they are studying, i.e. insects (HyperStudio).

2nd GRADE
* Language Arts skills can be reinforced, i.e. phonics, sounds, vowel digraphs (Word Munchers).
* Draw programs are used to create pictures about topics they are studying, i.e. animals (KidPix).
* Students can learn to locate states and find information about the different states in Social Studies (MacUSA).
* Students can use an on-line encyclopedia to gather information about subjects they are studying (Groliers).
* Math software programs are utilized to reinforce problem solving, operations, and computational skills (Troggle Trouble Math).
* Science software programs can help students learn about certain principles of science, i.e. gears and belts (The Way Things Work).
* Keyboarding starts in 2nd Grade. Young children gravitate easily to keyboarding and the use of the home keys. Proficiency with keyboarding prepares students for process writing (MicroType PAWS).
* Multi-media production techniques continue in 2nd Grade. Students contribute to or create reports about their class, their best friend, their family, and classroom studies of inquiry, i.e. nature studies (HyperStudio).
* They work with university pre-service students on-site and then communicate through the Internet about their collaborative projects.

3rd GRADE

* Students in 3rd Grade use electronic journals to respond to a prompt posed by the teacher. These questions can be connected to literature, science, social studies, or a classroom activity. Some prompts encourage reflective responses, i.e. "What do you think about ...?" or, "How do you feel about ...?" (Microsoft Works).
* In Reading, during a unit on disasters, the teacher searches the Internet for sites that relate and organizes bookmarks for the students to use when they are doing their research (Netscape).
* Students have sentences loaded on their disks. The teacher prepares sentences containing errors in spelling and grammar. The sentences also contain spelling words. Students edit the sentences. Also, depending on what grammar skills are being taught at that time, students may have other tasks to complete. For example, when the class is studying subject and predicate, student change the subject of the sentence into one font and the predicate of the sentence into another font (ClarisWorks).
* Students conduct interviews and type their reports (ClarisWorks).
* Students write and illustrate their own books as an extension of classroom learning and these books are used as an evaluation tool.
* Students prepare slide shows to display information to parents and other classes (ClarisWorks).
* The students produce class, group, and individual reports on a variety of topics, i.e. All About Me, All About Us, ocean life, historical landmarks and places, weather, and space (HyperStudio).
* The on-line and video encyclopedias are used to check facts, locate details, and collect information for projects.
* As part of Social Studies, students use print resource materials to predict the climate, land forms, and the native wildlife of various communities around the world. Through the use of the Internet, they survey schools in those areas. They receive responses from all over the world which describe the actual land forms and climate from actual people. Students also survey other schools to learn about favorite snacks and sandwiches of children around the world (Netscape and cc:Mail).
* Students can study political and physical maps, learn the location of places on the globe, and compare/contract land forms (MacGlobe and MacUSA).
* Students can use draw tools to draw their own maps (ClarisWorks).
* Students communicate with NASA through the Internet to gain current information regarding shuttle launches.
* They have also made connections to other countries (i.e. Bangkok) and asked questions about their educational system, the weather and climate, time zone, and culture.
* Students connect to the Arctic and Antarctica to ask questions and follow the progress of expeditions.
* Weather is tracked through the weather sites on the Internet and students can follow cloud formations as they change throughout the day.
* Students investigate the body systems (BodyScope).

4th GRADE
* Students create a magazine article, type friendly letters, and practice spelling words (ClarisWorks).
* Students type a paragraph and use the thesaurus to reinforce the use of vivid adjectives (ClarisWorks).
* Students compose an acrostic poem to coincide with one of their Reading units (Claris Works).
* 4th Graders study regions of the United States. After the study of regions, students play "Where in the USA is the principal?" The principals sends an email message to a class and give clues for students to determine the city their principal is "visiting." The class collaborates and uses different resources to find and confirm their answer. They send an email message with their answer and follow the principal through various American cities.
* Chapters in Social Studies are outlined (ClarisWorks).
* States and regions facts are reinforced (Where in the USA is Carmen Sandiego?).
* Famous USA landmarks are visited (Netscape).
* Research for reports is conducted for Social Studies (Mac USA and Groliers).
* Student design and print title pages for their reports (Print Shop Deluxe).
* Students present reports in a multi-media format (HyperStudio).
* Math facts are practiced (Troggle Trouble Math).
* Students study body systems for Health (BodyScope).
* Keyboarding skills are reinforced (Mavis Beacon).

5th GRADE
* Students in 5th Grade write book reports and summarize chapters during novel studies to reinforce identification of main idea and supporting details (ClarisWorks).
* Students complete assignments such as practicing spelling words and finding parts of speech in their own writing (ClarisWorks).
* Students continue to develop keyboarding and word processing skills (ClarisWorks).
* Groups develop slide shows to teach other students and parents (ClarisWorks).
* Students create individual and group reports, i.e. All About Me (HyperStudio).
* Students practice individual and group problem solving while learning about westward expansion (Oregon Trail).
* Important historical documents can be reviewed, i.e. Declaration of Independence (Netscape).
* Students conduct research and create group reports (HyperStudio).
* The Internet and on-line encyclopedias are used to conduct research for ongoing work called specialty folders where each student becomes an expert and reports about a topic of their own choice (Netscape).
* When students study the Olympics, a teacher can organize bookmarks for the students to use so they could link to the Olympic sites and then research the various events (Netscape).

ART

* Art students create and print computer generated art work.
* Using a paint program, students design our yearbook cover and school t-shirts.

MUSIC

* The Music teacher uses a computer station for students to review music concepts, i.e. line and space notes, line and space numbers, up and down, stepping and skipping, the staff, instruments, listening, and writing original music. In the lower grades, students work in pairs. One person is the "doer" and one is the "watcher." The watcher learns and becomes the doer during the next class period (Early Music Skills, Note Speller, Music Munchers, Musical Instruments, Peter and the Wolf, Making Music, Musicus).
* The Music teacher developed a data base that contains over 3,000 entries. The data base includes name of songs, the appropriate grade level, the book and page number, the curricular area, i.e. Math, Science and the curricular topic, i.e. weather, animals, oceans. The data base is available on our local area network. Any teacher can download the data base and sort by field of interest. The teacher can then request that the song be taught in Music to correspond to classroom instruction or ask the Music teacher to make an audio tape which can be used in the classroom by the teacher. The Music teacher is willing to rearrange the order she teaches her material in order to effect a direct connection with classroom instruction (Microsoft Works and ClarisWorks).
* The Music teacher utilizes a number of data bases to organize routine work, i.e. student names, class lists, choir lists, attendance charts, interest groups, award lists, listening library, audio-visual library (Microsoft Works).

PHYSICAL EDUCATION

* Our Physical Education teacher places heart monitors on students and provides a computer hard copy graph of a student's variance in heart rate throughout an activity period. Students learn about heart beat, training target zones, and pacing (Polar Vantage).

REMEDIAL READING

* Our remedial reading students practice letter formation and recognition and also dictate and illustrate stories.
* By listening and retelling stories from a CD-ROM, the reading strategies of re-reading, fluency, use of expression, self-monitoring, one-to-one correspondence, and sound/letter correspondence are reinforced (Wiggle Works).

SCHOOL-WIDE

* One spring, the entire school participated in a project called C^3--Connecting to the Community with Computers. Children conducted research about our community on a variety of topics such as business, education, agriculture. They presented their research in a HyperStudio stack.

The goal is to utilize meaningful connections with all of the academic areas and, of course, the connections between disciplines. Technology facilitates the learning process but the curriculum is still the foundation for all teaching.

An Actual Plan
Need more specifics and more street-by-street directions? I have included an actual school-wide technology goals and the underlying strategies. A goal is what you want to accomplish. The strategies are how to accomplish the goal. We may choose to use all of the strategies, some of the strategies, or none of the strategies. The strategies just get us started. Most important is whether the goal is accomplished or not.

GOAL #1
Technology is integrated throughout the curriculum.
* Teams work together to plan units.
* Teams have time to work together during the school day.
* People serve as resources for each other.
* Innovative use of available technology is investigated.
* Students teach students.
* Parents or community members assist in classrooms to provide assistance for technology.
* Teachers learn how to use available software programs.
* Community members and parents visit to share how technology is connected in their work world.
* People explore the capabilities of the Internet.
* People work with university personnel to connect literacy and technology.
* Teachers continually upgrade their technology proficiency.
* Students teach teachers.
* The technology proficiencies are discussed.
* Staff members are provided with training on their own level.
* Assistance in the computer lab is investigated.
* Use of district and outside resources are investigated.
* Training needs are determined.
* Grade level sharing sessions are investigated.
* Successful practice is reviewed.

The Roadblocks
Is the road always smooth? No, there are many roadblocks, detours, and traffic jams. It is a rough road. As they say, technology is great ... when it's working. Here are just a few of the problems that we encountered along with some of our contingency plans for avoiding dead stops.

The roadblock - Lack of computers: Even though we were supposed to be the school of technology, we started with only one computer in each classroom; that was discouraging. With a lack of hardware, it is difficult to integrate technology in the curriculum.

The solutions - We have written lots of grant proposals. We don't get all of them but we keep trying. Even a 50% success rate can move some of the boulders off the road. Also, check with the DOE, local and national businesses, World Wide Web, and your parent organization for other sources of funding. Establish a long range time line as a reminder when there will be more hardware and people can see the road ahead.

The roadblock - Lack of skill and fear of failure: Many teachers may have a total lack of experience and limited proficiency with operating computers and using software. Veteran teachers did not receive technology training in their preparation for the classroom. This lack of skill and experience can result in a real hesitation to use technology because teachers may not want to appear as anything less than a expert in front of students.
The solutions - We demonstrate model lessons to get people started. The leaders can promote and provide opportunities for teachers to attend training sessions during school, after school, and during the summer. Principals can make the arrangements for teachers to visit other schools and observe other classrooms. Find a way so teachers can take computers home during vacations. This will provide the extra time that is needed to strengthen skills and comfort levels. We try to provide a risk-free environment to encourage teachers to try lessons that are unfamiliar and may require starts and stops. When you say do what you can, when you can, it becomes less threatening.

The roadblock - The "lure" of technology: There is a real temptation to use technology as a game, for fun, because it is a novelty, because the programs are inviting, and so on. Look very closely at the students. What are they actually doing? What is their view of technology. Is it a tool for learning or do they think they are playing "games?"
The solutions - We are constantly cautioning to safeguard against the use of technology for the sake of technology itself. Technology is a means to an end rather than the end itself. We are always asking "What's the purpose?" and "How does this connect to curricular goals?" We keep reminding everyone that technology is a tool for learning and not games. The use of technology is always for an educational purpose and to accomplish curricular goals. We need to progress beyond the mentality of just exploring the software applications. Here is an analogy that can help teachers grasp the importance of this concept. A teacher wouldn't throw a math book out in a classroom and say, "Here, go ahead and explore this math book for the next 30 minutes. Choose what you want to do. I'll just walk around and answer your questions." Likewise, the teacher shouldn't let students simply explore software programs. There should be a carefully guided purpose for its use and a direct correlation to the curriculum.

The roadblock - Lack of internal support: Without staff sharing and staff support, it is difficult for teacher to blaze a trail alone.
The solutions - Teachers need help that is easy to find and available when they need it. Our solution for building an internal support system has taken

the framework of in-house focus sessions, teachers on a technology committee who are willing to answer questions and help others trouble shoot, surveys to determine what is needed, and question/answer periods at teachers' meetings.

The roadblock - Lack of administrative involvement: Teachers can feel like they are driving a bus that is speeding out of control if they are not supported by their principal and central office.
The solutions - Principals out there--support, support, support! Using technology is a change for teachers--they need the same types of support as when they are implementing any other new instructional technique. Leaders can also model the use of technology, take a risk and lead in-house workshops, provide a risk-free environment where teachers can try new lessons without fear of reproach, and find ways to create a culture of self-help and peer support.

I'm sure there are other roadblocks but these are just a few. Don't let the roadblocks stop you. You may slow down occasionally, stop and start, and even feel lost at times. But creative problem solving, teamwork, and perseverance are ways to keep your bus moving.

Fine Tuning the Bus
It's great when some teachers and some principals are on the bus. But, if we want all students to get the same advantages, we will need to make sure that everyone that is needed is on the same bus. It requires a team effort to keep the bus moving. How does your team look? Is everyone on your bus? Is everyone on the team doing their part? Use this check list to make sure that your bus passengers include everyone who is needed for a successful ride.

Starting at the top ...

* Is your **superintendent** a strong proponent for the advancement of the use of technology? Has the superintendent designated funds, established the use of technology as a district priority, provided state-of-the-art resources and access for all students and teachers, and reminded everyone of their responsibility to use the resources consistently and wisely?

* Does your **district** have a short and long range technology plan which coordinates efforts throughout the district. Does your plan include:

1) a description of the schools and their current resources;
2) the history of technology use within the district;
3) a needs assessment;
4) the district's mission statement;
5) a technology mission statement;
6) goals;
7) instructional objectives for distance learning, multi-media, computer literacy, and technology integration;
8) objectives for media resources;

9) objectives for administrative uses in communication, student data, and inventory;
10) a 5 year Action Plan on how to get from here to there;
11) a plan from curriculum development;
12) personnel needs;
13) a time line for the purchase of infrastructure, hardware, and software;
14) how to evaluate the plan and use of technology;
15) a plan for maintenance and replacement; and
16) staff development needs?

* Does district have a **technology coordinator** to oversee the implementation of the technology plan? The coordinator can advise teachers and principals on what hardware to purchase. The district coordinator can also establish a system to request technical assistance and repairs. Being a district coordinator is a big full-time job. The good news will be that people will use technology a lot. The bad news will be that it will break down a lot. The coordinator will need to be able to devote undivided attention to keeping the system running. This person should be extremely knowledgeable, have strong people skills, be willing to work hard and long, and remember that the focus of the position is to support people--teachers and students--not "stuff."

* Does your district have **technology trainers** who are knowledgeable in the use of software and instructional applications? They can conduct training sessions at the district level and also travel to each building to address the individual needs within the district.

* Does your building have a **technology committee** which meets regularly? Their tasks can include gathering input from the staff and then making decisions on purchasing hardware and software based on budget allocations. Typically, our staff is surveyed 2-3 times per school year. If teachers indicate that there is a need for a software program to reinforce a certain skill, the committee can review software and make appropriate purchases to fulfill the identified needs. The technology committee can also conduct in-house technology workshops and be available to trouble shoot minor snags on a daily basis.

* Does the **principal** advocate the use of technology, model the use of technology, stay current, and work side-by-side with teachers while learning, planning, and implementing the use of technology?

* Are your **teachers** willing to learn new skills, apply the skills within the classroom, and take a risk? Classroom implementation may have to occur before personal proficiency because technology is changing so quickly that there is always more to learn.

* Are your **parents** part of the team? Principals and teachers should keep them informed and use every opportunity to demonstrate how technology is being used effectively to accomplish the curricular goals.

* Are your **students** the positive recipients of a team effort aimed at giving them the opportunities that are needed for them to succeed in a technological world?

But where is all of this headed?

The Destination

What does the road ahead look like? We know we are fortunate because of the great resources we have in our bus depot. But I believe that a beautiful building is just four walls and technology is just hardware. It is what you do with your resources that matters. It's the people who make the difference. We have made a commitment to integrate technology within the curriculum and use technology to accomplish our curricular goals. Are we integrating technology in the curriculum? Yes. Will you see it every time you walk in a classroom? No. I like to make this analogy. Are we teaching Math? Yes. Will you see it every time you walk in a classroom? No. So it is with technology. We are seeking meaningful curricular connections.

We know that we still have a long way to go. The more you know, the more you realize what you don't know. We have a long range travel plan which is based on our resources and local needs. We have agreed to use technology as a tool to accomplish curricular goals and to support the integration of the curriculum as a whole. All this requires lots of time to learn, a willingness to take a risk and explore unknown territory, and teamwork to keep everyone on the same road. We may not all be on the same part of the road, but we are traveling toward the same destination.

SUMMARY - WASN'T THAT EASY?

1 - Follow Research and Make a Difference with Teachers

Hopefully, the information from the research study has provided you with specific administrative strategies which influence teachers to examine their teaching beliefs and improve their classroom teaching. The information about principals was gathered from the viewpoint of teachers. If genuine school reform will only take place by starting with the world of teachers in individual classrooms, then the logical place to find that information is by asking the teachers themselves. During the interviews, teachers were told that this was their chance to tell other principals that this is what principals should do and when they do it is helpful to teachers. They obliged. They told us what they want principals to do and when they do just that, it has a positive influence on their willingness to examine their teaching beliefs and practices and to improve. So principals, what are you waiting for? Do what teachers are

asking you to do and make a difference!

2 - Follow the Road Map and Make School Restructuring Really Happen
Is the rhetoric of restructuring another cycle in education which will fade before soon? Only time will tell. However, consider the following: Restructuring schools use research, successful practice, and professional judgment to examine teaching and learning to determine how children learn best. Then, those learning opportunities are provided for all students. Restructuring involves expanding your view of school to include parents and community members; we all work together for the benefit of students. Finally, restructuring brings a commitment to continuous self-reflection and self-examination. That makes sense so if this is just another cycle, it would be nice to get caught in a loop and stay right here.

3 - Get on the Bus and Make a Difference with Students!
The good news is that there is room for everyone on this bus. School change and using technology will continue to be a journey for all of us. There is always another road to travel. But take your bus trip with a road map, a plan, a purpose for learning.

Most of all, try to remember that technology is not the thing; people are. Technology is just one tool of learning. Technology may be the catalyst for change but it is not the focus--hence technology as just one piece of our *We C.O.N.N.E.C.T.* model. Without balance, we risk the chance of swinging too far on the pendulum as educators have done in previous reform movements.

Now you have heard about our bus trip. I hope it sounds doable. We have a saying at our school, "If there's a problem, we'll solve it." Problems are challenges instead of barriers. This simple motto empowers us to dodge potholes and keep the bus moving. So ... get on the bus!!!

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Attachment

We C. .N.N.E.C.T.

Curriculum

everything that is taught

Technology

one tool which is used to accomplish our mission

Objectives

specific academic, social, emotional, and physical goals

WE

students, staff, parents, community

Connections

underlying philosophy which guides all practice and activities

Needs

recognition that all students' needs must be addressed

Evaluation

ongoing reflective measures to determine whether goals are met

Nurturing Environment

emphasis on people as the most important element